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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

July 31, 2007

TO: Internal File

THRU: SKC Steve K. Christensen, Environmental Scientist/Hydrologist

FROM: Priscilla W. Burton, CPSSc, Environmental Scientist III PWB by an

RE: Degassification Volume -- Add Well G-19, Canyon Fuel Company, Dugout Canyon Mine, C/007/0039, Task ID #2812

SUMMARY:

Attachment 2-1 of the **Methane Degassification Volume** of the MRP contains baseline survey information gathered from well sites. The well site G-19 was surveyed in November 2006 and resurveyed in July 2007. This sites are located northeast of the Pace Canyon Fan Portal in Sec 20 of T13 S., R.13 E (Table 1.1, Figure 1-1, and Plate 1-4). Degas well site 19 will disturb an additional 2.3 acres (Table 1.2). This amendment brings the total disturbed acreage for all degas wells to 27.15 acres, and the total mine acreage for all facilities to 79.3 acres (Vol 1, Sec 114, p.1-9).

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Analysis:

Appendix 2-2, Volume 1 of the MRP provides a general outlook on the soils of the Book Cliffs in the vicinity of the Dugout Mine. Figure 1-1 and Plate 1-4 (**Methane Degassification Amendment Volume**) shows the location of the degas wells. Table 1-1 provides locations of the wells and Table 1-2 states each well's acreage. Total acreage for the well sites G-1 through G-17 comes to 24.85 acres. Degas well site 19 will disturb an additional 2.3 acres (Table 1.2). Total disturbed acreage for all degas wells is therefore 27.15 acres (Division calculation). [07312007]

The specific soils information for degasification well sites G-2 through G-19 is found in Attachment 2-1 (**Methane Degasification Amendment**) of the MRP. (Sites G-1 and G-8 were not developed.)

Baseline soil chemistry information for soils at sites G-2 through G-7 was collected at the time of disturbance (Attachment 2-1), all subsequent sites were surveyed and soil analyzed prior to disturbance. The following parameters were analyzed: texture (particle size analysis), pH, Electrical Conductivity, Sodium Adsorption Ratio, percent $CaCO_3$, plant available Nitrogen, Potassium, and Phosphorus (Section 243). Soil sample analyses are found in Attachment 2-1.

The sites are located at approximately 7,400 to 8,900 ft (see Fig 1-1 and Plate 1.4). The site descriptions, drawings, and photographs are in Attachment 2-1. Some of the sites were previously disturbed by logging (Section 222.400, Table 3-1, pg 3-16, Attachment 2-1 section 4.3), previous exploration or road construction (sites G-6, G-9, G-11, G-12, G-14, G-15, G-16, G-17, G-19).

Site descriptions, sketches, profiles, and soil analyses are in Attachment 2-1.

Findings:

The information provided meets the requirements of the Regulations.

OPERATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

Analysis:

Topsoil Removal and Storage

Sites G-8 through G-19 and G-31:
[07312007]

Site configurations are provided in Attachment 5-1. Disturbed acreage for each well site is tallied in Table 1-2. Topsoil salvage areas vary from 0.32 acres at site G-6 to 2.75 acres at sites G-13 (Table 1-2).

Topsoil removal volumes are listed in Table 2-1 and Section 222.400 and Attachment 2-2. Stripping depths will vary from site to site based upon the soil survey. Within each site, stripping depths may also vary with topography and previous disturbance. Section 231.100 indicates that at site G-19 only 1.27 acres of the 2.3 total have topsoil that will be recovered and stockpiled. (The soil survey sketch in Attachment 2-1 and topsoil calculations in Attachment 2-2 confirm this statement.) Topsoil will not be salvaged from beneath the topsoil storage areas. Topsoil stockpile volumes are provided in Table 2-1 and approximate dimensions are listed in Table 2-2. Stockpiles are constructed against the slope, therefore height measurements reflect the original ground surface. Stockpiles for sites G-11 and G-12 will be constructed with 1.5h:1v side slopes (Attach. 2-2). Stockpiles at G-19 will be of two types: 1) long and low along a pre-disturbed roadway and 2) a stockpile against the highwall at the pad site (Table 2-2 and Attachment 2-2). Stockpile dimensions and slopes are illustrated. The landowner's concurrence with stockpiling topsoil along the access road is provided in Attachment 2-3. This statement is not notarized, but is accepted in good faith.

Erosion control methods for all stockpiles will include creation of stable slopes (ordinarily no steeper than 2h:1v), a berm around the base of the stockpile, surface gouging of the pile face and seeding with seed listed in Table 3-2.

At some pad sites, stockpile slopes steeper than 2h:1v have been created temporarily. The steeper stockpile slopes allow for less disturbed area, but create difficult conditions for vegetation establishment. These steeper slopes are temporary and will be reduced during contemporaneous reclamation of the drilling pad sites. A projected date for contemporaneous reclamation of each sites is provided in the table in Attachment 5-2.

Subsoil will be excavated for use as berms and to create a mudpit at each site (Sec. 231.100, Methane Degassification Volume).

Findings:

The information provided meets the requirements of the Regulations.

RECLAMATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240

Analysis:

Degas Well Sites [07182007]

The reclamation timetable is shown on Figures 5-15 and 5-26. Unless otherwise specified, sites will be reclaimed in one phase after methane venting ceases. The well sites will be graded, topsoiled, roughened, seeded, and mulched (see Figures 5-4, 5-8, and 5-12). Topsoil replacement depth for each site is listed in Table 2-3. Delays in well plugging will occur as described in Sec.242.100.

The plan describes the reclamation of the drilling mud pits in Section 242.100. The mud pit will be allowed to dry and will be filled with soil that will be compacted to minimize settling. There will be mixing of the cover material with the rock fragments and sediments of the mud pit to avoid creating an abrupt boundary between the layers.

The plan indicates the sites will be ripped to a depth of eighteen to twenty four inches (Section 242.100 and 341.200) to reduce compaction.

Topsoil will be re-spread using a trackhoe. The soils will be handled when loose and friable (not too wet, not too dry), see Section 242.100. Redistribution thickness is shown in Table 2-3.

Reclamation of the AMV road will not take place until final reclamation of sites G-18 and G-31. Section 542.100 suggests that the timeframe for "each major step in the reclamation plan" could be found in figure 5-12 (should be 5-15 or 5-26). Figure 5-26 indicates the weeks to completion from the start of reclamation activities. The Table in Attachment 5-2 indicates the planned year for contemporaneous reclamation work to begin for all but two sites, which will be retained indefinitely. Final reclamation dates for three wells (G-3, G-4, G-6) have been documented.

Soil Nutrients and Amendments

Soil nutrients and amendments will be applied to the redistributed soils based on analyses of samples collected from the stockpiled topsoil as compared with baseline information.

Soil Stabilization

Soil may be replaced at grades of up to 1.5h: lv (p. 5-70). The steepness of these slopes will be reduced at their base, providing a concave slope. Soil stabilization techniques also include ripping the subsoils (see p. 2-39), gouging all slopes 3H: 1V or greater after topsoil application (p. 2-40 and 5-76) and hydromulching the seeded surface (p. 2-41 and 3-44 and 3-50). Slopes which are 3h: lv or steeper will be gouged using a trackhoe (p. 5-70).

Findings:

The information provided meets the requirements of the Regulations.

RECOMMENDATIONS:

The application is recommended for approval.